

Notice of Allowability

Application No.

10/747,824

Examiner

Trung Dang

Applicant(s)

DIANA ET AL.

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment after final filed 8/19/05.
2. ☒ The allowed claim(s) is/are 1-15, 17-20 and 22-26.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date ____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____

Trung Dang
Primary Examiner
Art Unit: 2823

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Briski on August 26, 2005.

IN THE CLAIMS

Claim 13: Change claim 13 as follows:

A ferroelectric polymer die, comprising:

a silicon (Si) substrate;

an oxide thermal insulation layer on top of the Si substrate;

a first metal layer on top of the oxide layer;

a ferroelectric polymer on top of the first metal layer;

an interlevel dielectric (ILD) layer on top of the ferroelectric polymer layer;

a second metal layer on top of the ILD layer; and

a via metal fill plug passing through the ILD layer and the ferroelectric polymer layer to electrically connect the first metal layer to the second metal layer,

wherein the second metal layer has a thickness in the range of 20 nanometers to 100 nanometers.

Claim 17: Change the dependency of claim 17 to claim 15.

Add new claim 26 as follows:

The ferroelectric polymer die of claim 20, wherein the interlayer via plug is formed by an electroless plating process.

Allowable Subject Matter

2. The following is an examiner's statement of reasons for allowance:

Claims 1-12 and 22-25 are allowed over prior art of record for the same reasons indicated in previous Office action.

Claim 13 and its dependent claims are allowable over prior art of record because the prior art does not teach or suggest a ferroelectric polymer die structure as claimed, which includes a second metal layer having a thickness in the range of 20 nanometers to 100 nanometers. In the Johnson reference cited in previous rejection, metal layer 40 (Fig.10) was interpreted to read on the claimed second metal layer. However, the thickness of metal layer 40 is approximately equal the thickness of ILD 36 which is from about 0.5 to 5.0 microns (para. [0058]). It would have been unobvious as to why one skilled in the art would be motivated to select the thickness of metal layer 40 in the range as claimed because the difference between the claimed range and the disclosed range is so large that modification would be unreasonable.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is 571-272-1857. The examiner can normally be reached on Mon-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Trung Dang
Primary Examiner
Art Unit 2823

08/27/05